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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference 030439WO | FOR FURTHER ACTION See Form PCT/PEA/416 | |
| International application No. PCT/US04/35689 | International filing date (day/month/year) 24 November 2004 (24.11.2004) | Priority date (day/month/year) 24 November 2003 (24.11.2003) |
| International Patent Classification (IPC) or national classification and IPC IPC: G01R 23/00(2006.01);G01R 31/28(2006.01) USPC: 702/75 | | |
| Applicant QUALCOMM INCORPORATED | | |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of ____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> | | |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p> | | |
| Date of submission of the demand 16 June 2005 (16.06.2005) | Date of completion of this report 06 March 2007 (06.03.2007) | |
| Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1430 Alexandria, Virginia 22313-1430 Facsimile No. (571) 273-2201 | Authorized officer John Barlow Telephone No. (571) 272-1562 | |

Form PCT/PEA/409 (cover sheet)(April 2005)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US04/39689

Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

- ☒ the international application as originally filed/furnished
- ☒ the description:
- pages 1-15 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the claims:
- pages 16-21 as originally filed/furnished
- pages* NONE as amended (together with any statement) under Article 19
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the drawings:
- pages 1/7 - 7/7 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to the sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to the sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US04/39689

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims NONE YESClaims 1-32 NO

Inventive Step (IS)

Claims NONE YESClaims 1-32 NO

Industrial Applicability (IA)

Claims 1-32 YESClaims NONE NO

2. Citations and Explanations (Rule 70.7)

Please See Continuation Sheet

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

V. 2. Citations and Explanations:

Claims 1-32 lack novelty under PCT Article 33(2) as being anticipated by Luick (USPUB 2003/0229662).

With regards to claim 1, 10 and 30, Luick (USPUB 2003/0229662) teaches a method, a processor and a computer readable program for determining an operating parameter of a chip having first and second ring oscillators, comprising:
measuring a frequency of the first ring oscillator; (Refer to figure 6)
measuring a frequency of the second ring oscillator; (Refer to figure 6) and
calculating an operating parameter of the chip as a function of the first and second ring oscillator frequencies. (Refer to figure 6)

With regards to claim 2, 11 and 22, Luick (USPUB 2003/0229662) teaches obtaining two ring oscillator clock counts, separated by a time difference, from a ring oscillator; obtaining two independent clock counts, separated by the time difference, from a clock output independent from the ring oscillator; and calculating a ratio of the difference between the two ring oscillator clock values and the difference between the two independent clock values. (Page 4, Paragraph 0056)

With regards to claims 3, 12, 23 and 31, Luick (USPUB 2003/0229662) teaches the calculated operating parameter comprises temperature. (42; Refer to figure 6)

With regards to claims 4, 13, 24 and 32, Luick (USPUB 2003/0229662) teaches the calculated operating parameter comprises process speed. (42; Refer to figure 6)

With regards to claim 5, 14 and 25 Luick (USPUB 2003/0229662) teaches multiplying the measured frequency of the first ring oscillator by the measured frequency of the second ring oscillator to obtain a result; and determining, as a function of the result and characterization data of the chip, the chip's operating temperature. (Page 4, Paragraph 0056)

Supplemental Box

With regards to claim 6, 15 and 26, Luick (USPUB 2003/0229662) teaches dividing the measured frequency of the first ring oscillator frequency by the measured frequency of the second ring oscillator to obtain a second result; and determining, as a function of the result and characterization data of the chip, the chip's process speed. (Page 4, Paragraph 0056)

With regards to claim 7, 16 and 27, Luick (USPUB 2003/0229662) teaches multiplying the measured frequency of the first ring oscillator by the measured frequency of the second ring oscillator to obtain a second result; determining, as a function of the second result and the characterization data, the chip's operating temperature; and adjusting the determined process speed according to the determined operating temperature. (Page 4, Paragraph 0056)

With regards to claim 8, 17 and 28, Luick (USPUB 2003/0229662) teaches calculating a scaled frequency value from the first and second measured ring oscillator frequencies and characterization of data of the chip; comparing the calculated scaled frequency value with a known range of scaled frequency values relative to temperature; and determining, from the comparison, the temperature of the chip. (Page 4, Paragraph 0056)

With regards to claims 19, Luick (USPUB 2003/0229662) teaches a system comprising: a chip having first and second ring oscillators; (Page 4, Paragraph 0056) and a process configures to: measure a frequency of the first ring oscillator; (Refer to figure 6) measure a frequency of the second ring oscillator; (Refer to figure 6) and calculate and operating parameter of the chip as a function of the first and second ring oscillator frequencies. (Refer to figure 6)

With regards to claims 20, Luick (USPUB 2003/0229662) teaches the chip comprises the processor. (Refer to figure 7)

With regards to claims 21, Luick (USPUB 2003/0229662) teaches the processor is separate from but operably connected to the chip. (Refer to figure 7)

NEW CITATIONS

USPUB 2003/0229662 (LUICK) 11 December 2003, See Page 2, Paragraphs 0016-0020
US 5,568,083 (UCHIYAMA et al.) 22 October 1996, See column 1, lines 26-67
US 5,385,865 (NEIDER et al.) 31 January 1995, See column 2